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REPORT OF THE
WIRELESS STEERING COMMITTEE

OFFICE OF CONSUMER AFFAIRS
AND BUSINESS REGULATIONS

SEPTEMBER 18, 2002

AUG 28 2008

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Preface

This report is the result of a joint effort by representatives of the Massachusetts municipalities, statewide agencies, the legislators, the wireless industry and other interested parties. The Massachusetts Office of Consumer Affairs and Business Regulation and the Massachusetts Wireless Steering Committee would like to thank the many hardworking and dedicated participants for their interest, insight and commitment:

Steering Committee Members:
Jennifer Davis Carey, Office of Consumer Affairs and Business Regulation
Neil Chayet, AT&T Wireless, Tier Technologies, Inc.
Geoffrey Beckwith, Massachusetts Municipal Association
Jack Troast, Department of Economic Development
Robert O'Connor, Executive Office of Environmental Affairs
James Slater, Executive Office of Public Safety
Peter Abair, Department of Housing and Community Development
Cary Hinton, Sprint PCS
James Kennedy, Representative Daniel Bosley
Sandy Callahan, Senator Michael Morrissey
Geoff Richelew, Representative Mary Jane Simmons
Mel Kleckner, Massachusetts Municipal Association
Cort Boulanger, Massachusetts High Technology Council

The Technology & Infrastructure Working Group
The State Lands Working Group
The Process & Policy Working Group
The Research & Fact Finding Working Group

Representative Daniel Bosley
Representative Mary Jane Simmons
Senator Michael Morrissey

AT&T Wireless
Berkshire Connect, Inc.
Cingular Wireless
Department of Economic Development
Department of Housing and Community Development
Division of Capital Asset Management
Executive Office of Environmental Affairs

Executive Office of Public Safety
Executive Office of Transportation and Construction
Massachusetts Federation of Planning and Appeals Boards
Massachusetts High Technology Council
Massachusetts Highway Department
Massachusetts Municipal Association
Massachusetts Office of Dispute Resolution
Massachusetts Software Council
Massachusetts Transit Authority
Merrimac Valley Planning Commission
Sprint PCS
T-Mobile USA, Inc.
Tier Technologies, Inc.
UMass Donahue Institute
Verizon Wireless

The Massachusetts Wireless Steering Committee asked these stakeholders to work cooperatively to create this collaborative document. As such, this report does not constitute the findings and recommendations of any particular individual, department, agency, group, or organization, but represents the findings and recommendations of the Wireless Steering Committee. The time, effort and dedication of these interested parties resulted in this "Report of the Massachusetts Wireless Steering Committee," and for that we are grateful.

Introduction

This report of the Wireless Steering Committee addresses issues surrounding the siting of wireless telecommunications service facilities in Massachusetts. The working groups were comprised of a broad range of interested parties or stakeholders, including representatives from the legislative and executive branches of state government; municipalities; government agencies or entities that regulate environmental affairs, public safety, economic development, housing and community development, state-owned lands, state highways and consumer affairs; the land use planning community, including representatives from planning and appeal boards, planning directors and other public officials; and the wireless carriers that provide wireless services in Massachusetts, high-tech industry groups and other representatives.

After nearly two years of collaboration, research and dialogue, the interested parties were able to identify points of agreement and narrow the areas of disagreement. They also arrived at a number of recommendations so that the wireless carriers may continue with the build-out of their wireless networks in a competitive manner as set forth in the Federal Telecommunications Act of 1996 while, at the same time, respecting and preserving the local control of land use decisions that has been a longstanding prerogative of the Massachusetts municipalities. In submitting this report, the Wireless Steering Committee and the members of the working groups would like to thank Director Jennifer Davis Carey and the staff of the Office of Consumer Affairs and Business Regulation for their tireless efforts in bringing the interested parties together to address the issues described in this report and present recommendations that will inure to the benefit of everyone.

Background and Overview

As the wireless communications industry has grown, tension has developed between the wireless service providers who build the physical infrastructure necessary to ensure the reliable use of wireless services (i.e. wireless telephones) for Massachusetts residents and municipalities, who make land use decisions under the Massachusetts General Laws Chapter 40A, the Home Rule Procedures Act and the home rule amendment to the Massachusetts Constitution. This tension was exacerbated by the enactment of the Federal Telecommunications Act of 1996 (the "FTCA"), which established a framework to enable licensed wireless carriers to engage in the build-out of their wireless networks throughout the country in a timely and competitive manner. While the FTCA preserves local zoning authority, the Act does limit the ability of local municipalities to exercise their zoning or land use authority over the location of wireless facilities (i.e., cell towers and other wireless facilities). Moreover, the Act provides wireless carriers the right to challenge any zoning decision of a city or town that allegedly violates the Act by bringing suit in Federal District Court.

In addition to the authority vested in the Federal Communications Commission ("FCC") and the federal courts under the FTCA, a wireless service provider is deemed to be a "public service corporation" by the Massachusetts Department of Telecommunications and Energy (the "DTE"). That status, as provided by Massachusetts General Laws chapter 40A, section 3, also limits the power of municipalities to regulate the siting of wireless facilities through local zoning and land use decisions. Prior to 1996, the DTE had determined that wireless carriers could qualify as public service corporations and could petition for exemption from local zoning requirements that would unreasonably regulate their facilities. In February 1996, the DTE held that wireless service providers no longer qualified for public service corporation status;

however, in January 1998, after protracted hearings, the DTE reversed that holding and reaffirmed its prior decisions that wireless carriers could qualify as public service corporations and thus petition the DTE for an exemption from local zoning.

By 1998, there were a number of attempts by advocates for local and municipal control to limit the reach of the FTCA and to end the jurisdiction of the DTE over wireless facilities. There was also a growing number of state and federal lawsuits brought by wireless service providers under the FTCA and other federal and state laws challenging the decisions of local municipalities regulating the siting of wireless facilities.

Beginning in 1998, a number of stakeholders, including municipal and state leaders, wireless industry representatives and other interested parties agreed to meet to discuss working together to explore ways to resolve the escalating tension between the needs of the wireless carriers to build their wireless networks and the obligations of the municipalities to regulate zoning matters. In the spring of 1998, leaders of the Massachusetts Municipal Association (the "MMA"), the Conservation Law Foundation ("CLF") and four of the six wireless service providers licensed to operate in Massachusetts formed the Massachusetts Municipal-Industry Wireless Collaborative (the "Collaborative"). The remaining two wireless service providers joined the Collaborative a year later.

After nearly two years and the voluntary funding of the Collaborative by its members, along with regular meetings to discuss and exchange proposals, ideas and possible solutions for the differences that exist between the wireless service providers and the Massachusetts municipalities, the members of the Collaborative made progress in defining the issues in dispute. The Collaborative undertook an educational campaign and, in 2000, published a detailed primer entitled *Working With Wireless, The Massachusetts Municipal-Industry Wireless Collaborative;*

Communities, Carriers and Conservationists Collaborate to Find Workable Solutions for Siting Wireless Facilities ("Working With Wireless"), which was sent to the 351 towns and municipalities in Massachusetts, as well as to other public officials and interested parties. The Collaborative also prepared proposed guidelines and draft legislation which, if it had been enacted, would have created a state wide zoning process for wireless facilities in Massachusetts. During the collaborative effort, the wireless carriers agreed to refrain from seeking exemptions from local zoning from the DTE. The Collaborative members also agreed to refrain from filing legislation or taking other steps that would undercut the cooperative efforts of the Collaborative.

In early 2000, the Board of Directors of Massachusetts Municipal Association did not support the draft legislation and the collaborative effort was discontinued. Several bills were filed with the legislature, including legislation that would have prohibited wireless carriers from receiving public service corporation status. This legislation was added as an "outside section" to the final version of the state budget and sent to Governor Cellucci's desk for approval. It was ultimately vetoed by Governor Cellucci, who believed that legislation changing the public service corporation status and removing the DTE process would not resolve the problems between the municipalities and the wireless carriers. Other bills, including one similar to the legislation initially proposed by the Collaborative that would have created a statewide zoning processes for siting wireless facilities and a bill providing an alternative dispute resolution process to facilitate the resolution of disputes between communities and applicants outside the courtroom, were also filed. In short, the parties ended back where they began.

In the fall of 2000, following a request from Governor Cellucci, the Office of Consumer Affairs and Business Regulation brought the Massachusetts Municipal Association and the wireless carriers together and invited additional parties to join a broad coalition of all

stakeholders. The additional parties invited to join this process included representatives from the General Court, the Department of Economic Development, the Executive Office of Environmental Affairs, the Executive Office of Public Safety, the Department of Housing and Community Development, the Division of Capital Asset Management and Maintenance, the Massachusetts Highway Department/Mass. Turnpike Authority, the Massachusetts High Technology Council, the Massachusetts Federation of Planning and Appeals Boards, Berkshire Connect, Inc., the Massachusetts Software Council, the Massachusetts Association of Planning Directors, local public officials and others.

The Office of Consumer Affairs and Business Regulation also solicited input and requested a proposal from the University of Massachusetts Donahue Institute (the "Donahue Institute") to research the political, economic, regulatory, legal and technical issues associated with the siting of wireless facilities in Massachusetts. Although the Donahue Institute did not ultimately conduct this study due to the Commonwealth's budget constraints, the Office of Consumer Affairs and Business Regulation and the other interested parties that had accepted the invitation to join the broad coalition agreed to forge ahead and study a number of the issues related to the siting of wireless facilities in Massachusetts. Accordingly, under the aegis of the Office of Consumer Affairs, these parties formed the Wireless Steering Committee (the "Steering Committee") and four separate working groups: (1) the Technology & Infrastructure Group; (2) the State Lands Group; (3) the Process & Policy Group; and (4) the Research and Fact Finding Group. A complete list of the members of the Steering Committee, the working groups and the legal consultants is attached as Exhibit A to this report.

In 2001 and 2002, the Steering Committee and members of the working groups met separately and collectively to address the points of contention involving the siting of wireless

facilities as well as the areas of agreement between the interested parties. At one of their earliest collective meetings, the parties identified the general areas of "common ground" that the municipalities and the wireless carriers could agree upon. These areas include the following: (1) both the industry and the municipal officials should be well informed as to the issues involved in siting wireless facilities; (2) there should be public access to the wireless technology of today and the future; (3) all parties desire to have wireless technology that works well, especially in the case of emergencies; (4) the build-out of the wireless network of wireless facilities should be conducted in as unobtrusive a manner as possible, while recognizing the competitive process mandated by the federal government as well as issues relating to coverage and capacity; (5) the local siting process should be fair and balanced and litigation should be avoided whenever possible; and (6) the parties should respect the concept of "home rule" in the context of reasonable local land use regulation.

The parties also analyzed and discussed the current and future trends that will impact the wireless carriers, municipalities and users as well as the importance of the wireless enhanced emergency 911 system ("E-911") in Massachusetts. The Steering Committee and working groups also addressed the possibility of siting wireless facilities on state and other publicly-owned land and methods of siting wireless facilities in a speedy, fair and non-confrontational manner. Each working group was specifically charged with reviewing particular concerns and making recommendations to be incorporated into the report of the Steering Committee.

The Technology & Infrastructure Group was charged with reporting on the current state of the technology and infrastructure as well as the future technological trend expected in the industry. The report of the Technology & Infrastructure Group is set forth in Chapter One of this report.

The State Lands Group was charged with exploring the viability of using publicly-owned real property to locate wireless facilities. The report of the State Lands Group is set forth as Chapter Two of this report.

The Process & Policy Group was formed to study the methods and process of wireless facilities siting in Massachusetts and outside Massachusetts, with an emphasis on which methods and practices worked well and which did not. The final report of the Process & Policy Group, including the recommended next steps, is set forth as Chapter Three of this report.

Finally, Research and Fact Finding Group was asked to serve as a liaison between the working groups and the Steering Committee; to synthesize the reports of the other three working groups; and to make a final set of recommendations which are set forth in Chapter Four of this report.

Chapter One: Report of the Technology & Infrastructure Working Group

Charge

The Technology & Infrastructure Working Group was charged with reporting on the current state of technology and infrastructure relating to the siting of wireless facilities. The group examined issues such as height, quantity, geographic location and co-location of wireless facilities, as well as the use of stealth technology. The group also considered future changes and trends that may impact the technology and infrastructure of wireless facilities. The working group also examined the wireless enhanced emergency 911 system -- making it a priority in its findings.

Discussion

A wireless facility is a base station with an antenna or antennas, and associated wireless equipment that transmits and receives radio waves at specified frequencies. Each wireless facility is part of the wireless network of wireless facilities that allows people to communicate using their mobile telephones and other wireless services (i.e., e-mail, internet access, etc.). In the case of mobile telephones or "cell telephones," a person placing a call sends a signal through a radio frequency spectrum to a wireless facility which then transfers or "hands off," the signal to the neighboring wireless facility or site. This means that wireless facilities must be within a certain distance of each other, depending on terrain, demand for service and the type of technology involved.

The wireless carriers are licensed by the Federal Communications Commission (the "FCC") to use a certain radio frequency ("RF") in a particular geographic area. The six wireless carriers licensed to provide wireless services in Massachusetts have differing wireless network designs. Each wireless carrier is assigned a separate radio frequency and must complete the

build-out of its wireless networks in order to retain its license. When and where the wireless network is built depends on population and the public's demand for wireless service. Accordingly, as long as demand increases, the wireless carriers must continually expand and improve their wireless service networks.

Wireless Facility Siting Requirements

There are a number of factors involved in determining where to locate wireless facilities in a particular geographic location. Wireless communications are a low power, line-of-sight radio technology and will transmit only as far as there is a clear path. Transmission signals can be adversely affected by natural elements, including trees, hill, bodies of water and man-made features such as buildings. Accordingly, a number of important, interrelated factors must be considered, including the particular geographic location, topography, the requisite height, the number of facilities that may be required, and the cost to acquire or lease the site for the wireless facility or facilities.

Geographic Location/Topography

Geographic location is an important consideration, both in terms of individual sites and in terms of developing an interrelated network of sites. As the wireless device travels from the coverage area of a site, the signal is transferred or "handed off" by the system from that site to the next available site. The coverage area of each site must overlap the coverage area of any neighboring sites. If there is no overlap, the call will be "dropped" as the wireless device leaves the coverage area of the site without being close enough to be "picked up" by the next site.

The ideal wireless network can be described as a honeycomb, where each site and the area it covers represents a "cell," and with adjacent sites providing seamless coverage over the extended area. Assuming a flat terrain with an equal number of users spread over uniform areas,

each wireless cell site would ideally be spaced an equal distance from each other, each antenna would be at the same elevation, each channel would broadcast at the same power, and each site would cover the same amount of geography, and the load on the wireless network would be spread equally. However, in the real world, especially in New England, variations in topography, the presence of buildings and other development, population density, etc., preclude such a symmetrical wireless network.

Given this variation, the wireless network, as a whole, as well as the placement of individual sites, must be custom-fitted to avoid poor wireless network performance and to provide maximum service levels to an ever-changing number of users. For example, if a wireless facility serves a geographic area with a high number of users, there may be a number of blocked calls, which is caused when a site cannot handle the volume of users attempting to access the system at a given time. Further, if a site does not have enough signal coverage to overlap adjacent sites, that site will not properly hand-off a caller to the next site and the call will be dropped. This adversely affects all sites in the surrounding area of the wireless network and results in poor service quality.

The placement of wireless facilities in a particular geographic area is also a function of service objectives. Individual wireless carriers may have differing wireless network designs based on the quality standards of service they intend to provide. Where the area covered by an individual wireless facility is small and there are sufficient adjacent sites, the quality of service increases. Conversely, where the area is large with insufficient adjacent sites, the quality of service decreases. As the demand for wireless communications increases and more users access the wireless network, the wireless network will approach its capacity and will need to be expanded. With the introduction of wireless data communication and other technological

advances, the wireless networks will need further expansion to handle the additional capacity required by the new technologies.

Height

A second important consideration is the height of a wireless facility. As mentioned above, wireless service is a line-of-sight radio technology that will transmit only as far as there is a clear path without obstructions such as hills, trees, buildings, etc. The overall height of a particular site is based on a combination of ground elevation and the structure height, which must be sufficient to meet the necessary service requirements.

Although the requisite height for a particular wireless facility will depend on an analysis of the surrounding circumstances, including geography, number of users and location of the other facilities within a wireless network, there are a number of general assumptions relating to the height of a particular wireless facility. For example, when designing a wireless network for a city, the wireless facilities should be closer together so that the signal can travel within or between buildings. Similarly, if the obstacle is a hill, the wireless facility should sit on the hill to provide coverage around the area, or be designed to provide coverage only to one side of the hill.

Conversely, a wireless facility can be too high to properly meet the needs of the network. Wireless facilities must manage a number of individual calls within the limited broadcast spectrum provided under FCC licenses. In order to service a wide consumer base, the wireless network must reuse its frequencies within a fairly limited geographic area. A site that is too high, such as a site placed on top of a very tall building, allows a signal to reach another cell site using a similar frequency, creating significant wireless network operating problems. This differs from radio or TV transmissions where the assigned frequencies are unique and not reused

within the broadcast territory. Given these considerations, the optimal height for a wireless communications facility is generally between 100 to 150 feet.

Number of Wireless Facilities

Another important consideration facing all wireless carriers is the number of wireless facilities necessary to provide coverage to a particular geographic area. A common wireless network design trade-off is the height of a facility, or facilities, versus the number of facilities in given area. A taller facility will generally provide coverage for a larger area, with the result that fewer facilities will be required for that area. As the height of a facility decreases, the coverage area per site also becomes smaller. One result is that more sites are needed to cover the same overall area. One oversimplified way to look at this trade-off is that areas with taller wireless facilities need fewer sites. Conversely, areas with shorter facilities need more sites. Also, shorter facilities generally provide better service to dense user traffic, and taller facilities generally provide better service to more sporadic user traffic. For example, a city with high population density and high demand for service would benefit from many sites at lower heights. A rural area, with a much lower population and fewer terrain obstacles would benefit from fewer but taller sites.

Wireless Facility Siting Enhancements

There are a number of ways in which wireless carriers can minimize visual impact of new wireless facilities. One common method is known as “co-location” which occurs when two or more service providers locate their antennas on the same wireless support structure. A second method is “stealth technology” which consists of using special materials or designs to disguise wireless facilities.

Co-Location

Co-location is the siting of two or more wireless antennas belonging to different wireless carriers on the same support structure. The support structure can be any existing structure such as a tower, water tank, billboard, or building. All wireless carriers and municipalities should explore co-location as a first option for new site development. Such co-location can occur on existing or new structures, including structures developed by other carriers or by specialized communications facility developers. Co-location is readily accommodated so long as there is an appropriate vertical separation between the antennas of different carriers to avoid interference (generally a minimum of ten feet, but technological advances could reduce this distance further). However, if a wireless facility is to carry multiple antennas, it will likely need to be taller and stronger (i.e., a tower with multiple wireless carriers will be larger than a tower carrying only one antenna).

Co-location helps to reduce the overall number of new structures necessary to accommodate wireless facilities, and is a practice widely accepted by the industry. As noted above, this holds true for existing facilities as well as new facilities. For example, a municipal water tank, because it often extends significantly above the tree line, will often have sufficient height to support a wireless facility. Such a water tank could be used to locate multiple antennas at different positions on the tank such as the top of the tank, or on the railings of the catwalk. Co-location also allows municipalities to streamline the permit approval process to the extent that if approval of the initial user resulted in local review, that review need not be duplicated. This limits the number of wireless facilities in a particular area and saves time, effort and the cost of developing additional supporting structures. Co-location has also encouraged most carriers to establish co-location agreements and share in the leasing and permitting process.

While co-location makes sense from the carrier and municipal perspective, there are certain circumstances that preclude co-location as an option. The location of multiple carrier antennas on a water tank, as discussed above, may not be possible where the carriers seek to co-locate on the *top* of the tank. Due to the need to have a horizontal separation greater than that required for vertical separation, the placement of multiple carriers on the top of a water tank is more problematic where there is limited space.

Further, the six licensed providers of wireless services in Massachusetts operate at different frequency ranges. The frequency ranges unique to each carrier will be affected differently by obstructions from one frequency range to another. Therefore, a site that provides acceptable coverage for carrier 'A' may not provide acceptable coverage to carrier 'B' due to the distance between the carrier's existing sites in the area, local terrain or obstructions and the different frequency ranges applicable to each carrier.

Finally, there may be structural limitations to co-location. For example, a facility may not have the structural integrity or physical space to support additional antennas. Available space on the co-location structure may be too low to provide acceptable coverage. A co-location structure originally permitted for a height slightly above the tree line, may not provide for unobstructed coverage for future co-locators. The ability to accommodate multiple carriers on a single facility is often a function of the height and strength of a support structure.

Stealth Technology

Stealth technology utilizes special materials and designs, such as flagpoles and trees, and building components, such as rooftop penthouses and steeples, to disguise wireless facilities. This technology can provide wireless site deployment solutions for areas such as residential zones, historic districts or highly visible locations.

Existing structures are the first choice of carriers to mount and make needed antenna facilities less visually intrusive. The range of facilities that can be, and have been, used is extensive. In many cases, these applications demonstrate the use of creative architectural design solution to minimize negative visual consequences, including the construction of matching wall surfaces extending atop existing building penthouses, behind which the antennas are mounted; the placement of antennas within church steeples and building cupolas; the placement of antennas within or on tower structures such as flagpoles; the mounting of antennas on existing commercial radio (AM/FM) towers; placing antennas within existing structural supports for highway billboards or recreational area lighting towers; and even camouflaging wireless facilities within new structures designed to appear as evergreen trees.

Stealth technology allows the wireless facilities to blend in with an existing structure and/or surrounding area, minimizing the visual impact of wireless facilities. The permit process may be streamlined so that stealth structures fall within the less-restrictive sections of the bylaws and ordinances of particular municipalities. Indeed, stealth technology may actually enhance the physical appearance of existing buildings. Finally, the use of stealth technology may provide the opportunity to replace deteriorating steeples, spires, billboards, etc., with structures that look the same, but are much stronger and safer than the older structure.

The use of creative architectural approaches are only viable to the extent that they can overcome the line-of-sight signal transmission, terrain changes, and other natural or man-made features which cause the shadowing or degrading of signal quality. While stealth technology can offer solutions in a variety of applications, there are limits to its use. Generally, stealth technology is somewhat less conducive to co-location opportunities. Stealth technology may likewise preclude the use of certain types of carrier antennas.

The use of certain stealth applications may not, in some cases, be appropriate or consistent with an existing geographic area or building features. Stealth technology can also be quite expensive.

The Future of the Wireless Build-Out

The future of wireless network development efforts will include a continuing expansion of basic voice and data wireless service to all areas of the state, including those suburban and rural areas currently without coverage. The wireless carriers will continue to use the siting enhancement methods to expand their wireless networks where additional capacity is needed, due to increases in the number of calls, as well as the use of new data services.

The radio spectrum is a limited resource, and the allotted segment of the spectrum licensed to carriers can carry only a finite number of calls. As more customers in an area subscribe to the service, the wireless carrier must add more cell sites to the wireless network. These new sites are usually interspersed with the existing sites, with each using its frequencies over a smaller geographic area, so that the system as a whole can carry more calls simultaneously. For these reasons, a second generation of demand for sites in populated areas which some may consider already covered, may occur.

There is also an anticipated third generation or "3G" of wireless development, which will include expanded functionality, such as text messaging and Internet connectivity. Similarly, the ubiquity of the mobile telephone is reaching the point where customers are substituting it for land line based telephone communications, again necessitating quality improvements for reasons of both capacity and coverage.

The economic life of the wireless infrastructure currently being developed is readily projected to last for a twenty-year period, and will likely continue well beyond that time. While

other deployment systems are either in discussion or being tested, none will likely replace the existing land-based antenna mounting systems currently operated by the wireless carriers. An alternative satellite-based infrastructure is in place, but the limited capacity and high cost have effectively limited this system to be complementary to terrestrial services. Such a system will service a valuable niche market accessing remote areas or providing global communications to high priority clients not easily or economically serviced by terrestrial wireless carriers. However, such a system will not replace the present wireless network of land-based wireless facilities.

The Wireless Emergency 911 System In Massachusetts

The issue of wireless 911 service is critical for the Commonwealth. Presently, all wireless 911 calls are routed by the various wireless telephone carriers to the communications section of the Massachusetts State Police in Framingham and Northampton where dispatchers handle, on average, 4,500 calls per day. For each call, the dispatchers must question the caller to determine where the caller is located, and then contact the appropriate agency to respond to the request for service. This situation poses several problems, not the least of which includes sufficiently calming the caller to accurately ascertain his or her location. In many situations, responses to emergency calls are delayed more than necessary, and critical time is lost while the location of the incident is determined and the proper emergency response agency is contacted.

A 1996 Federal Communications Commission ruling, FCC Docket 94-102, requires wireless telephone carriers to provide enhanced calling information ("E-911") to call centers or Public Safety Answering Points ("PSAPs"). To implement this system, the ruling identifies two phases of implementation. In Phase I, carriers are required to provide callback number and cell site location information to PSAPs so that dispatchers can see the telephone number of the

wireless caller. This information aids public safety dispatchers in cases where the caller is disconnected, or in situations where a callback is necessary. Phase II of the federal law not only requires carriers to supply telephone number information, but also requires that the carriers to provide the geographic coordinates of the telephone from which the call is being made. Further, the FCC ruling provides that wireless carriers must identify the latitude and longitude of a wireless telephone making a wireless 911 call within certain parameters, depending on the location technology employed. This information will allow PSAP personnel to accurately determine the location of the user and save critical time in contacting the appropriate emergency response personnel.

Current Status of E-911 Implementation

As of the writing of this report, Phase I is being implemented in Massachusetts. Specifically, according to officials at the Statewide Emergency Telecommunications Board (the "SETB"), the switching equipment used by the state has been upgraded and is now capable of accepting and displaying Caller ID and other required information. In addition, almost all carriers are forwarding Caller ID data to the state. To complete Phase I, the wireless carriers also need to implement the necessary software to provide cell site, sector and carrier information that may be required.

Massachusetts is one of twenty-seven states that has yet to fully implement Phase I as required by FCC Docket 94-102. Further, no state has implemented Phase II, although it is believed that some PSAPs around the country are conducting Phase II pilot programs.

Implementation Issues

This section identifies some of the major implementation issues facing the Commonwealth in its rollout of wireless E-911 services. This is not an enumeration of all

pertinent issues, nor is it an attempt by the Technology & Infrastructure Working Group to minimize any issue not listed here.

Some of the major implementation hurdles identified by the working group are as follows:

- **SETB and the Carriers Differ on Reasons for Phase I Implementation Delay**

  As noted above, the SETB has indicated that the four switches through which wireless calls are routed to the State Police have been upgraded and are fully capable of accepting the data required for Phase I implementation. All that remains is for the carriers to forward cell site, sector, and carrier information, in addition to the Caller ID data they currently forward.

- **Phase II Cannot Be Implemented Until Phase I Is Complete**

  Opinions differ on whether the Commonwealth can move to Phase II implementation before Phase I implementation has been completed. Phase II will require that the state integrate mapping software with its PSAP equipment to visually display caller location. Further, the carriers will need to implement the hardware and software necessary to identify the coordinates of the cell telephone making the call and to forward that data to the state switches.

- **Routing of Calls Needs to be Re-Examined**

  Currently, all wireless 911 calls are routed by the carriers to the four state switches. These switches, in turn, route all of these calls to the communications section at State Police Framingham and Northampton. This fact, together with the tremendous volume of calls coming into the state police, can have an adverse impact on emergency response times. With the implementation of Phase II, intelligent routing can be used to deliver the

call to the PSAP that has jurisdiction over the location from where the call is being made. Some municipal officials call for further study of a design that directly and automatically routes calls to local jurisdictions.

- **There Are Not Enough Wireless Facilities to Provide Wireless E-911 Services to the Entire State**

  Unfortunately, the lack of sufficient wireless facilities and the incomplete status of the build-out of the wireless networks have had -- and will continue to have -- a detrimental impact on the implementation of E-911 and, accordingly, to the safety of Massachusetts wireless users. This is the case even though the implementation of E-911 has not been completed. Indeed, even if the Commonwealth and the wireless carriers were to immediately implement Phase II, a significant number of state residents would not be able to take advantage of this enhanced service. Large areas of the state remain without the appropriate infrastructure to provide coverage for basic wireless 911. In fact, wireless service west of Route 495 is limited to major highways and to the most densely populated areas.

- **Required Resources**

  One of the most significant hurdles facing the state in its implementation of wireless E-911 service is obtaining the resources needed to build a safe and efficient system. Both the state and the carriers will need to commit substantial funds to implement the hardware and software necessary to provide and display wireless telephone location data. Some states have addressed this issue by passing legislation requiring carriers to levy special fees on customers. These funds are then placed in a state account, and some, if not all, of the funds are used to pay for the implementation of the necessary wireless services. Massachusetts has recently joined these other states, through the

passage of legislation that would direct the SETB to coordinate and effect the implementation of wireless enhanced 911 services. The carriers will also need to commit large sums of money to building new cell sites, if wireless service is to be extended to areas of the state where it does not currently exist.

Recent Enactment of Massachusetts E-911 Law

Senate 1920, now Chapter 61 of the Acts of 2002, was signed into law on March 15, 2002 and will assist the state in providing E-911 services throughout the Commonwealth. This legislation amends M.G.L. chapter 6A, section 18A, which deals with the definitions related to Executive Office of Public Safety, and M.G.L. chapter 6A, section 18B, which describes the powers and duties of the State Emergency Telecommunication Board. A copy of Chapter 61 of the Acts of 2002 is attached to this report as Exhibit B. Chapter 61 of the Acts of 2002 accomplishes the following:

- Imposes a surcharge of $.30 cents per month per telephone number on subscribers with access to a 911 system and authorizes the Board to increase the surcharge up to $.75 cents per month based on the actual expenditures incurred by wireless carriers in implementing a wireless enhanced 911 system. Surcharges in other states are greater than $1.20 per number, per month.
- The surcharge will be deposited into the newly created Wireless Enhanced 911 Fund, and will expire in five years. Monies from this fund may be expended only for the SETB's activity, the creation and maintenance of PSAPs, and the recovery of costs incurred by wireless carriers in providing E-911 service. Other funding sources could be diverted to this fund, if necessary.
- The SETB must use the monies in the Wireless Enhanced 911 Fund for the acquisition

and upgrade of PSAPs; equipment capable of receiving wireless E- 911 service information; administrative costs for PSAPs and emergency communication centers; wireless network and database development, operation and maintenance; training of emergency service personnel regarding receipt and use of wireless enhanced 911 service; and educating consumers about the operation, responsible use and limitations of E-911 service.

- After the PSAPs have been funded, the wireless carriers may also be reimbursed for costs associated with designing, installing and maintaining the provision of E-911 service.
- Wireless carriers must submit a quarterly report to the SETB on the total surcharge revenues collected and costs incurred in the service, operation or maintenance of E-911 services during the previous quarter. Carriers must also submit an annual report of anticipated expenditures for the following fiscal year, including funds collected and expended in the previous fiscal year to the Legislature.
- The SETB will be required to work with the disability community, wireless carriers, and municipalities to ensure that wireless enhanced 911 service is accessible to people with disabilities to the maximum extent possible. In short, the passage of Chapter 61 constitutes a crucial step toward making wireless E-911 service a reality in Massachusetts.

Chapter Two: Report of the State Lands Working Group

Charge

The State Lands Working Group was charged with reviewing the process by which the Division of Capital Asset Management and Maintenance ("DCAM") permits the location of wireless telecommunication facilities on state-owned land.

Discussion

Under M.G.L. Chapter 7, Sections 40E-40J, the DCAM commissioner is responsible for the acquisition, control and disposition of real property. The commissioner may acquire interest in real property on behalf of the Commonwealth for the use of state agencies by gift, purchase, devise, grant, eminent domain, rental, lease, rental-purchase or otherwise. The commissioner assists in the preparation and approves plans for the organization of all space within and around buildings and appurtenant structures used by state agencies. The commissioner's authority to dispose of state land arises from either special legislation or the chapter of the General Laws governing the state agency that has jurisdiction over the land. If authority to dispose of the property exists, the commissioner may, after notification to, and with the advice of, the executive heads of state agencies and secretaries of the executive offices, determine that real property is not needed for the use of any state agency. If the commissioner determines that such property is surplus to both the current and foreseeable needs of state agencies, then he or she determines whether any other governmental agency has a current or foreseeable direct public use for the property. If the commissioner determines that the property is not needed for current or foreseeable state or direct public use as defined above, and that the property should be disposed of, he or she would then declare that the property is available for disposition. The commissioner would also identify restrictions, if any, on the property's use and development

necessary to comply with established state and local plans and policies, and send written notification of such to the House and Senate Committees on Ways and Means, as well as the Joint Committee on State Administration.

In addition in accordance with General Laws chapter 7B, the Asset Management Board (the "AMB") was created within DCAM for, among other things, the following purposes, the promotion of sound management of all assets held by state agencies; the protection against projects with conflicts of interest; the prevention of unfair or windfall profits accruing to any individual or group of individuals; the assurance that approved projects do not interfere with nor deny an agency's access to assets that are needed to meet current or reasonably foreseeable legal obligations of the agency presenting the project; and assurance that each project is technically and financially viable. Under the AMB process, any state agency with a real estate project may elect to seek authorization through the AMB. All such project requests are received by the DCAM Office of Real Estate.

There are a number of open questions relating to the availability of state land under the administration of DCAM, including the process relating to the location of facilities on land owned by the Massachusetts Highway Department and the proper role of municipalities in which state land is located. Indeed, the municipalities have taken the position that uses of state lands are exempt from local zoning only where the use is for an essential state function. Because wireless facilities are commercial in nature, the municipalities believe that the siting of wireless facilities should be subject to any local zoning ordinance or by-law of the municipalities in which the facility is located.

Next Steps

DCAM will continue to foster cooperation with all state agencies, municipalities and wireless carriers to achieve responsible and comprehensive sitings of wireless facilities on state lands. DCAM will continue its efforts to streamline the process of siting wireless facilities to ensure all wireless carriers and other applicants receive timely, quality information from a single source to ensure a process that is fair, competitive and expeditious. Municipalities feel strongly that they should be included in siting decisions on state land and should share in the revenue stream from those wireless facilities as mitigation for any adverse aesthetic impact, to cover the cost of additional municipal services, and for reimbursement of lost revenue from possible alternate sites on municipally-owned land.

Chapter Three: Report of the Process and Policy Working Group

Charge

The Process and Policy Working Group of the Wireless Steering Committee was formed to study the current methods and processes for the siting of wireless facilities in Massachusetts. The working group contrasted and compared various Massachusetts municipal processes with each other as well as the processes utilized in other states, uncovered the "best practices" used by wireless carriers and municipalities and researched the process and experiences of the parties seeking exemptions from local zoning before the DTE under Massachusetts General Laws chapter 40A, section 3.

The Process and Policy Working Group was further charged with examining the possibility of developing several policy options for the Steering Committee, including but not limited to producing guides for municipalities and wireless carriers as well as sample bylaws and other options to help wireless carriers and municipalities work together in a non-confrontational and productive manner.

Discussion

Massachusetts General Laws, chapter 40A, and the FTCA provide authority for municipalities to regulate land use to protect the health, safety and general welfare of their present and future inhabitants. Under the powers granted under chapter 40A, all but two Massachusetts municipalities have developed local bylaws or ordinances to regulate the development and use of municipal and private property. In general, an entity or agency created by the Massachusetts Legislature is immune from municipal zoning regulations, absent statutory provisions to the contrary, where that entity or agency is performing an essential governmental function. Moreover, the FTCA specifically permits local zoning authority over wireless

facilities so long as the local zoning is not prohibitive or discriminatory, not based on any alleged health effects of wireless facilities and consistent with federal procedural requirements.

The following is a list of primary municipal officials with responsibility for the administration of local zoning matters: (a) zoning enforcement officers (most commonly building inspectors); (b) special permit granting authorities (often planning boards and zoning appeals boards, but sometimes boards of selectmen and city councils); and (c) zoning boards of appeals in their capacity as the authority for issuing variances and adjudicating zoning disputes.

Chapter 40A provides municipalities with wide latitude in the creation of their individual bylaws. All town zoning bylaw amendments are subject to review by the Massachusetts Attorney General prior to implementation to ensure compliance with state law (ordinances enacted by cities, however, are not subject to this review). The statute also clearly sets out the criteria for the issuance of special permits and variances. Furthermore, case law has developed in Massachusetts refining the powers and responsibilities of municipalities under chapter 40A, including the frequently quoted rule that variances are to be given sparingly.

Section 3 of chapter 40A is particularly important in the wireless facilities siting arena. Section 3, among other provisions, provides a process for public service corporations to seek an exemption from local zoning ordinances and bylaws. A petition for such exemption is submitted to the DTE and is heard by the Energy Facilities Siting Board (the "DTE Siting Board"). Under this authority, the DTE has the ability to set aside provisions of local bylaws and ordinances to effectuate the siting of a facility that is found to be necessary to the public convenience and welfare. Under section 3, DTE is required to undertake a balanced consideration of the public interest, including the effects of the requested exemption on the local community, the state as a whole and the territory served by the applicant. As wireless carriers

have been determined by the DTE to be public service corporations, they are permitted to avail themselves of this exemption process, and have done so in several instances. There have been 17 exemption requests heard by the DTE since 1984: 11 exemptions have been granted; five requests were withdrawn and one was granted pursuant to a joint settlement.

In 1996, Congress passed the FTCA, which allows reasonable regulation of wireless facilities by municipalities. The Act prohibits siting denials based upon concerns about health effects of any wireless facilities where such facilities are in compliance with federal radio frequency emission standards. It further prohibits any regulation, or local action that has the effect of prohibiting a wireless carrier from providing its customers with coverage, or which serves to discriminate among functionally equivalent providers of service. The relevant provisions of the FTCA, as enacted in 1996, are attached to this report as Exhibit C. Since the enactment of the FTCA, there have been a number of lawsuits arising out of local zoning decisions relating to the siting of wireless facilities. While the results of those lawsuits have been mixed and debatable, one result is clear – the litigation has been costly to the wireless carriers, the municipalities and all others involved.

Findings

Following the lead of the Steering Committee, the Process & Policy group began its work by attempting to determine common ground between the municipal officials and representatives of the wireless carriers. The municipal and industry representatives agreed, that any proposed solutions, would have to respect the basic concept of local control over zoning decisions consistent in a manner that is consistent with the FTCA and the jurisdiction of the FCC.

During a series of meetings, municipal and industry representatives discussed their

experiences with the siting of wireless facilities in the Massachusetts. The group discussed practices common to municipalities, and areas of tension between municipalities and wireless carriers. In addition, non-municipal members provided input and suggestions that helped frame the issues and identify areas of common concern or agreement.

As a starting point, the group performed a survey of Massachusetts zoning bylaws, model bylaws and ordinances from other states, and noted the following:

- There are several basic models of bylaws in Massachusetts, but communities often retrofit those model bylaws to suit specific needs.
- There are differences in the bylaws used in many Massachusetts municipalities. Many of the provisions that regulate the siting of wireless facilities differ from municipality to municipality. Those differences create confusion for some of the wireless carriers. Moreover, several elements of those bylaws conflict with the requirements of federal law. In a laudable attempt to not reinvent the wheel, municipalities often base their wireless telecommunications bylaws on existing bylaws. While building upon the works of others is a sensible approach, questionable bylaws are sometimes replicated from municipality to municipality. Nevertheless, in most cases, local zoning by-laws are used successfully in the course of wireless siting proceedings.
- While their use varies from municipality to municipality, consultants often play a significant role in the siting process. Applications to site wireless facilities generally require particular expertise, such as knowledge of radio frequency signal propagation, which can be critical to the proper siting of a wireless facility. One of the most important criteria for siting a wireless facility is a “demonstrated need” (the applicant must demonstrate a need for the wireless facility in the specific location in order to

provide service to its subscribers). Municipalities may engage a consultant to review such information. Radio frequency consultants can also help municipalities analyze whether preferred alternate sites are technically feasible. M.G.L., c. 44, § 53G enables municipalities to engage consultants to assist in the review process in an appropriate manner.

- Municipalities are generally opposed to the DTE exemption process set forth in section 3 of chapter 40A. The working group met with a representative from the DTE's siting division, which is the division of the DTE that is typically responsible for hearing petitions for exemptions from local zoning provisions under M.G.L. c. 40A, § 3. The DTE process can take longer than court proceedings, but tends to be less costly. The DTE process could possibly offer a negotiated process intended to result in a settlement benefiting both the municipality and the wireless carrier.
- The working group also met with a project manager from DCAM and the Deputy Director of the Office of Real Estate of DCAM, to discuss the existing process for siting wireless facilities on state owned lands. As previously discussed, state lands can be attractive to both wireless carriers and municipalities in some instances.
- Several state-owned properties currently accommodate wireless facilities unobtrusively, and have the potential to continue to do so, minimizing local impact. DCAM expressed its continued interest in developing state-owned land for siting wireless facilities, while acknowledging interest in municipal participation. The chapter 7 process that governs DCAM's dispositions of state lands is a comprehensive procedure, founded in a public and competitive process, under which DCAM is directed to manage all the Commonwealth's real estate assets. Municipalities want to be directly involved in this

process.

Next Steps

The working group discussed a number of proposed next steps which appeared to be in the best interests of all stakeholders. The possible next steps recommended to the Steering Committee are as follows:

Wireless Siting Consultants

- One of the issues of common ground between the municipalities, and the wireless carriers, relates to a uniform desire that both the industry and municipal officials be well informed as to the relevant issues surrounding the siting of wireless facilities. One idea is to provide assistance to municipalities in reviewing technical information relating to the siting of a wireless facility. There currently exist mechanisms for municipalities to seek technical or expert assistance in certain situations. Those mechanisms have been used successfully in the wireless facilities siting process. Under state law, local zoning and planning boards can require a wireless carrier or applicant for a wireless facility to pay reasonable costs for a RF consultant chosen and retained by the municipality. A process that provides the names of qualified consultants who may be retained by, or on behalf of, municipalities, may be helpful. Accordingly, in order to ensure that the consultants used by municipalities are of the highest quality, a registry of wireless siting consultants could be compiled and evaluated by a neutral state agency. The Department of Housing and Community Development ("DHCD") has offered to assist with this initiative.

Bylaw Guide Including Sample Bylaw Language

- Because Massachusetts municipalities have many different, and often times conflicting

bylaws and ordinances, and because provisions of those bylaws and ordinances may conflict with the FTCA, a guide for the creation of bylaws and ordinances that respects home rule while complying with the FTCA should be prepared. This guide would assist municipalities as they continue to work to create bylaws and ordinances that are reasonable, efficient and consistent to the extent possible. This guide would include sample bylaw and ordinance language with commentary explaining the current state of siting law and displaying some best practices on how bylaws should be created. This guide should include model language and/or general issues that should be addressed by a wireless facility bylaw.

Wireless Siting Process Guide

- In addition to a guide to assist municipalities in preparing their wireless bylaws or ordinances, there is the need for a guide to assist local public officials and industry representatives who participate in the wireless facilities siting process.
- A "what you need to know" guide should be prepared to assist municipal zoning officials who participate in the wireless facilities siting process. This guide would also assist wireless carriers in understanding how the process works and what municipalities require at their hearings, making the process more productive.

Abandonment Fund

- Because the Massachusetts municipalities have differing mechanisms to afford protection in the event that a wireless facility is abandoned (i.e., posting bonds, escrow accounts, etc.), a uniform approach with a central repository of the money should be considered.
- The creation of a statewide abandonment fund may help municipalities in the event a

wireless carrier or other owner of wireless facilities leave the state. The provisions relating to this abandonment fund would also obviate the patchwork quilt of bond and escrow requirements currently in use in many Massachusetts municipalities. Municipal participation however, would be optional, at least at the onset.

Mapping Information

- Many times the participants in the local wireless facilities siting process are not aware of the current locations of all surrounding existing wireless facilities. This problem is further complicated by the fact that the borders of municipalities have no relationship to the siting of wireless facilities. Moreover, not all wireless carriers can co-locate on all existing wireless facilities.
- In order to assist local officials in their deliberative process, wireless carriers should provide information relating to the location of their wireless facilities. Most local wireless bylaws now require carriers in their applications to examine all surrounding existing potential alternative sites. An operational study and cost/benefit assessment, including adequate funding, for the creation and maintenance of a repository of the locations of those facilities on maps provided to municipalities should also be undertaken. This could also assist wireless carriers in finding existing sites and encourage co-location.

Alternative Dispute Resolution Process

- As is mentioned above, the wireless facilities siting process often results in costly litigation. Indeed, a wireless carrier aggrieved by an adverse decision from a city or town may appeal to federal court under the FTCA, to state court under M.G.L. c. 40A or to the DTE under the public service corporation exemption process under M.G.L. c.

40A, § 3. Most cases ultimately result in a negotiated settlement or ruling where the wireless carrier is allowed to site its wireless facility or facilities in a particular location. This process is unnecessarily expensive for all parties involved and, at times, acrimonious.

- A process that allows the interested parties to mediate any disputes relating to the siting of wireless facilities should be explored.

Model Wireless Build-Out Project

- The boundaries that separate the Massachusetts municipalities do not lend themselves to effective statewide or regional planning for the build-out of the wireless networks. The particular zoning bylaws or ordinances of one city or town, moreover, may differ from, or conflict with, the zoning bylaws or ordinances of a neighboring city or town. In addition, municipalities often re-draft zoning bylaws to recognize new priorities or assist specific projects without taking regional concerns into consideration.
- Therefore, a pilot project is recommended to be created involving several municipalities, any regional planning commission that includes the selected municipalities, and the wireless industry. The project would include a detailed review of current wireless facilities siting bylaws and ordinances, current facility location mapping and the build-out requirements of the wireless carriers. The participants in this build-out project would consider the possible development of bylaws, educate residents as to state and federal requirements, and develop processes for efficient siting hearings, as well as an alternative dispute resolution forum. The experiences of these programs, as well as the experiences of any regional land use entities, would be used for the possible preparation of material for statewide distribution.

State Land Siting

- Land owned or controlled by the Commonwealth of Massachusetts, including the land owned or controlled by the numerous state agencies and independent authorities, may provide suitable locations for wireless carriers to locate their wireless facilities. For example, the highways and roadways of Massachusetts may be especially suitable locations for wireless facilities. Moreover, reliable coverage on those highways and roadways is essential to ensure the safety of Massachusetts residents and others traveling on the roadways. There are many other properties owned or controlled by the Commonwealth and other public entities that can be used for the location and co-location of wireless facilities.
- Wireless carriers should be encouraged to first research state-owned properties when filling gaps in their wireless network. As previously noted, the ability to streamline the existing site leasing authorization process is critical to achieving widespread state site feasibility and utilization in the future. When siting wireless facilities on state lands, DCAM should be sensitive to local zoning provisions regarding wireless facilities (i.e., height, tower type, etc.). Moreover, the Massachusetts municipalities believe that revenue sharing with the municipalities should be considered.

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Chapter Four: Report of the Research & Fact Fining Working Group

Charge

The Research & Fact Finding Group was asked to serve as a liaison between the working groups and the Steering Committee; to synthesize the reports of the other three working groups; and to make a final set of recommendations to be adopted by the Steering Committee. Accordingly, the Research & Fact Finding Group has attempted to synthesize the reports set forth in chapters one, two and three. While many of the concepts described in those chapters have been expanded or, in some cases, reduced to avoid duplication, the Research & Fact Finding Group has made all such revisions with the intent of honoring the substantive recommendations made in the individual reports. The Research & Fact Finding Group, moreover, fully endorses the analysis and recommendations made by the other working groups. Based on the work conducted by the other working groups and after deliberation by and between the members this working group, the following ten (10) recommendations were submitted to, and adopted by, the Steering Committee.

Recommended Actions

1. **Wireless Facility Bylaw Primer**. As recommended by the Process & Policy Working Group, there should be an updated guide containing sample bylaw and ordinance language with commentary. Because the law is continuously evolving in this area, this primer should be prepared by land use and municipal experts and contain an overview of the current state of the law. This primer should also take into account the different types of areas or districts where wireless facilities may be located (i.e., commercial, industrial, residential, rural, historic, etc.) as well as the different types of available wireless facilities and technologies that can be used in any given area or district (i.e., stealth technology, co-location, etc.), and make

recommended approaches in order to guide the municipalities in preparing, updating or reviewing wireless bylaws and ordinances. The Department of Housing and Community Development has offered to assist in this initiative.

2. **Wireless Facility Siting Process Primer.** As was also recommended by the Process and Policy Working Group, there should be a guide that describes the best practices for municipalities and wireless carriers to engage in the wireless facility siting process. This primer should address the best approaches for a "pre-application phase," where the wireless carrier makes initial contact and engages in a preliminary dialogue with a municipality; the scope and form of the actual application, including a detailed description of all relevant materials that should be submitted for consideration by a municipality; and the public hearing process, including the different standards that could be applied depending on the particular bylaws or ordinances and goals of the municipality. This primer should also be prepared by land use and municipal experts in conjunction with the wireless facility bylaw primer described above.

3. **Technical Assistance Pilot Program.** A program aimed at providing the municipalities with technical assistance in the wireless facility siting and decision-making process should be explored. This program could entail a description of the qualifications of any consultant qualified to render technical assistance; a process under which any such technical consultant could become eligible for such an assignment; a central repository or list of all such qualified consultants; a list of duties and responsibilities as well as a fee schedule to be charged by any such technical consultant; and a regulatory framework to ensure any such technical consultant properly discharges the responsibilities and duties and that the technical assistance program is not misused. Municipalities should retain the ability to choose, and to require the applicant to pay for, the consultant under existing law. Because of the relative success of the

present system and scope of this undertaking, this concept should be studied further and then first implemented on a pilot program basis.

4. **Alternative Dispute Resolution Pilot Program**. In order to avoid expensive and acrimonious litigation, the parties have agreed to recommend an alternative dispute resolution or mediation process. This process will have to balance the interests of the wireless carriers, the municipalities and any of the citizens actually aggrieved by a local decision or application to install a wireless facility. The mechanics of the alternative dispute resolution process will have to take certain factors, as they apply to the wireless siting process, into consideration. Those factors include but are not limited to the following: (1) what parties should participate; (2) to what extent the process should be confidential taking into consideration the Massachusetts open meeting and public records laws; (3) at what stage of the process should the mediation take place; (4) who may initiate the mediation; (5) whether the mediation should be voluntary; (6) who would serve as a mediator during the mediation process; and (7) who would pay for the mediation. Because of the nature of the mediation process, this program should be designed by representatives of the wireless carriers, the municipalities, the DTE, the Office of Consumer Affairs and Business Regulation and other stakeholders. Once a mediation process is established, this process should be first implemented on a pilot program or test basis.

5. **Mapping Information Program**. Assuming available funding, a central repository describing the location of all wireless facilities in Massachusetts should be created with the assistance of the wireless carriers, and then maintained in a central, publicly-available location. Because of the competitive nature of the wireless build-out, however, only the location of the wireless facilities should be identified and displayed. A process should be designed that

would allow the wireless carriers to submit the location of any and all wireless facilities to a state agency or entity, which shall have the responsibility of locating the facilities on a statewide or regional map. This information could be maintained within the Mass GIS and regional service centers. A plan for this program, including a cost-benefit analysis, should be prepared by representatives of the wireless carriers, the Office of Consumer Affairs and Business Regulation and any other interested parties.

6. **State-Owned Lands Program**. The present system under which state-owned lands may become available for the purposes of siting wireless facilities should be further studied with a goal of using such lands to ensure that wireless services may become more widely available. This study should be conducted by representatives from the carriers, the government entities with jurisdiction or control over state-owned properties and any other interested parties (including the impacted municipality).

7. **State-Wide Abandonment Fund Program**. The creation of a state-wide fund should be explored where a state agency shall maintain all deposits, bonds or escrow monies submitted by wireless carriers, landowners or other persons or entities that develop or maintain real property or structures upon which wireless facilities are secured. This fund may be modeled after the Residential Contractor Guaranty Fund maintained by the Office of Consumer Affairs and Business Regulation.

8. **Regional Model Wireless Build-Out Pilot Program**. As recommended by the Process & Policy Working Group, a regional model wireless build-out pilot program should be considered for implementation. This pilot program would ideally include a number of municipalities located in a particular geographic area where there is a need for further build-out of the wireless networks. This pilot program should include all of the recommendations

contained in this report. This pilot program could be coordinated by a team of people appointed by the Wireless Steering Committee with a report to be submitted to the Steering Committee as to the successes or failures of the recommendations set forth herein.

9. E-911 Implementation. A committee of persons involved shall be selected to work with the State Emergency Telecommunications Board to ensure the rapid implementation of E-911 in all areas of the Commonwealth of Massachusetts.

10. Areas of Future Study. As was mentioned earlier in this report, the Wireless Steering Committee and the working groups were not able to study all areas of controversy relating to the build-out of wireless networks. A number of those areas were discussed and reserved for future study by representatives of the stakeholders. The particular areas for future study include the following:

a) Economic Development. One significant issue to be addressed is the ways that the build-out of wireless networks will affect the economics of Massachusetts and its citizens. This issue was identified by the Donahue Institute as a key research question, but was ultimately not addressed by the Donahue Institute based on the lack of funding from the Commonwealth.

b) Health Issues and Safety. Although the Federal Communications Commission, the Food and Drug Administration and other public and private entities have determined that there are no adverse health effects from the radio frequency radiation that emanates from a wireless facility which is in compliance with FCC RF standards, concerns continue to be raised about health and safety issues regarding wireless facilities. Those issues should be addressed. The current state of the available research and the published studies should be reviewed by a public or private entity with the requisite expertise to opine on these issues. In 2001, Peter Valberg, Ph.D., an adjunct associate professor of psychology in the Department of

Environmental Public Health at the Harvard School of Public Health, and senior scientist at Cambridge Environmental, Inc., published a chapter in *Working with Wireless* entitled "Health and Safety Issues of Exposure to Radio-Frequency Emissions" which address those issues. A copy of that chapter is attached to this report as Exhibit D. The FCC and Food and Drug Administration have a web site dubbed "Cell Phone Facts" at www.fda.gov/cell-phones which deals with issues relating to the use of cell telephones, including answers to frequently asked questions involving health and safety issues. There have also been a number of other studies and reports relating to any potential health effects involved with wireless facilities and the use of mobile wireless communications devices. The professional literature relating to any possible health or safety effects resulting from wireless facilities should be further explored.

c) **Next Phase -- "3G".** As is mentioned in the Report of the Technology & Infrastructure Working Group in Chapter One, the future of wireless services will include an anticipated third generation or "3G" of wireless communications, which will provide expanded functionality such as text messaging and connections to the Internet. The possible impacts of 3G technology as well as the increases in usage of wireless services should be further studied to determine the impact on the build-out of the wireless networks in Massachusetts.